

Instruction manual version 4, 2008

Norsjö Carrier Electronic Short and Long version



NORSJÖ
Moped AB



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INTRODUCTION

We thank you for the trust you have shown us by buying a Norsjö Carrier Electronic. We hope that this manual will help you quickly get to know your new moped.

Read through this instruction manual from beginning to end before you start to use your moped. Any queries will be answered by Norsjö Mekaniska AB.

About this instruction manual

This instruction manual describes how your carrier moped should be used, how service and inspections should be carried out to make sure that the moped operates correctly and safely.

This instruction manual covers instructions for normal use and maintenance which can be carried out by the driver. More in-depth fault finding and maintenance should be carried out by qualified service personnel.

Remember that a well-maintained moped will make your work more enjoyable and safer and will also lead to lower maintenance costs and ensure a high second-hand value for your moped!

Guarantee

Even with a quality product, on the odd occasion, material or manufacturing faults arise which are covered by the guarantee. Contact Norsjö Mekaniska AB if such a fault occurs.

Do not modify the moped

The moped is designed and type-approved so that it complies with current legal requirements. No modifications may be carried out on the moped to change the motor's power or increase its speed.



In order to ensure correct working order and maintain a roadworthy moped, it is important that you always use original spare parts.

A modern carrier moped is a technically advanced product. Always turn to a qualified specialist if the moped needs to be repaired or adjusted.

Running-in

An electrically driven moped requires service and inspections in connection with its running in period. See further, on page 17, "Service in connection with running in period".

IDENTIFICATION of MOPED

Registration number

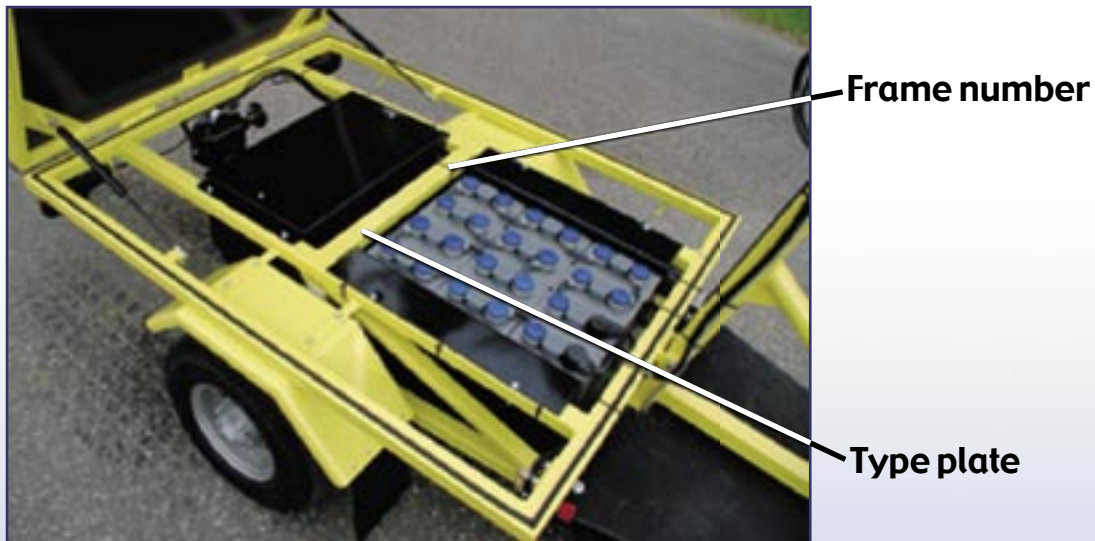
The moped's primary identity is its registration number. When ordering spare parts, the moped's registration number should always be quoted. The registration number can be found on the moped's rear fender.

Type plate and frame number

The moped's type plate and frame number are situated under the platform.

Motor number

The motor number can be found on a rating plate placed in the middle of the motor.



SAFETY INSTRUCTIONS



Working with the battery and the battery charger

When working on the moped's battery, special safety precautions must be taken.

General requirements regarding the area where the battery is to be charged

An area or room used to charge the battery must:

- not be hazardous in respect of fire or explosion.
- must be a safe distance from flammable or explosive materials.
- must not be in the vicinity of an open fire, sparks, hot surfaces or other possible combustible substances. Smoking is forbidden in the area where the batteries are being charged.
- must be dry.

Risk for damage/injury from corrosion

Battery acid from a lead battery contains diluted sulphuric acid. The acid attacks the skin and mucous membranes. It also attacks metals. Rinse any spills immediately with lots of water.

Use protective glasses

When working on batteries, protective glasses must be used because battery acid is extremely corrosive.

Protecting your eyes / eye shower

There must be an area which is easily accessible to shower your eyes in connection to the area where the batteries are charged. If battery acid comes into contact with your eyes, rinse with clean water and seek medical attention immediately. If possible, rinse your eyes during transport to the doctor.

Ventilation requirements during charging

Batteries being charged give off flammable hydrogen gas. Ignition can cause the battery cells to explode. It is therefore very important that charging takes place in a well-ventilated area. For detailed instructions, see Swedish Standard SS-EN50272-3.

Avoid short-circuiting

The battery's short-circuit current is very high and can cause powerful spark formation with the risk of skin burns and or cell explosion. Before any work is started on batteries, controls, electronics or the motor, the master switch should be disconnected along with the battery circuitry by disconnecting the battery's positive terminal. Use insulated tools. Remember that tools, rings and wristwatches can cause short-circuiting.

Highly dangerous tension

Lethal high tension electric current in the battery charger is present during charging which can cause personal injury. Only qualified personnel are allowed to carry out work on the battery charger.

Check the charger's input socket regularly.

To achieve the highest possible personal safety, the charger is supplied with a reinforced input socket. Remove the input socket from the mains socket and check its condition regularly. If it is damaged in any way it should be changed straight away.

Connect the battery charger to an earthed mains socket.

The charger must only be connected to an earthed power socket.

RANGE OF OPERATIONS of MOPED

The moped's range of operations is dependent upon how you drive, the amount of starts and stops, the load and the road surface. For these reasons it is difficult to specify an exact amount of time as to how long/far (range) you can run your moped.

In order to achieve the greatest possible range of operations, it is recommended:

Correct tyre pressure

Check the air pressure in the tyres regularly, low air pressure will reduce the moped's range.

Lubricated and correctly adjusted chain

The chain's condition affects the moped's range. A well-lubricated and adjusted chain works efficiently and provides a long range.

Soft acceleration

Fast acceleration leads to greater loads being placed on the battery which in turn reduces the range.

Adapting your speed

Every time you use the moped's brakes, you are losing energy. Adapt your speed by driving steadily so that the brakes are used as little as possible

INSTRUMENT AND CONTROLS

Master switch

The master switch switches off all power. There are two positions:

- OFF -the master switch is turned counter clockwise.
- ON -the master switch is turned clockwise.

Master
switch



Ignition switch

The ignition switch has three positions, of which two of them are identical.

The three positions are:

- Position 1 = Locked
- Position 2 = Drive
- Position 3 = Drive

The ignition switch's Locked position can be obtained by turning the key counter clockwise as far as it will go. In this position, all electrical functions, except for the indicators are switched off and the ignition key can be taken out.

The ignition switch's Drive position can be obtained by turning the key to the middle position, or as far clockwise as it will go. In this position, the engine's ignition system and the moped's electrical system except for the lights are operating.

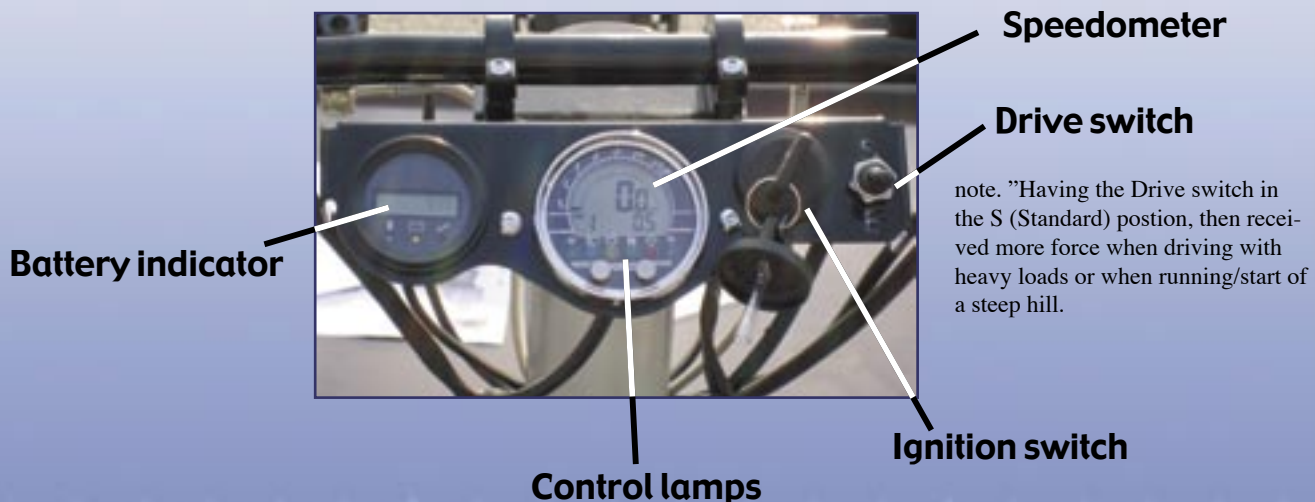
Power to the lights takes place via a generator which is completely separate from the battery and the lights may therefore only be used when the engine is running.

Never leave the moped with the master switch in the ON position.

Control lamps

On the instrument panel, there are control lamps:

- Yellow lamp - when lit, the charger is connected.
- Blue lamp - when lit, the main beam is switched on.
- Green lamp - when lit, the indicators are switched on.



BATTERY INDICATOR

The moped is equipped with a gauge on the dashboard showing the capacity of the battery. The display shows between 0-100% where 100% indicates full charge and then reduce gradually down towards 0% from discharge.

At about 20% charge remaining, the moped needs a recharge to full capacity again.

The gauge also indicates any error codes from the directly on display.



Handlebar controls – left side

Functions which can be found on the handlebar's left side are:

Full/half beam switch and full beam flash.

Full/half beam switch has two fixed positions which switch on the full beam/half beam. There is also a spring-back position which switches the full beam on (flash)

Half beam must be switched on when driving during daytime!

Horn

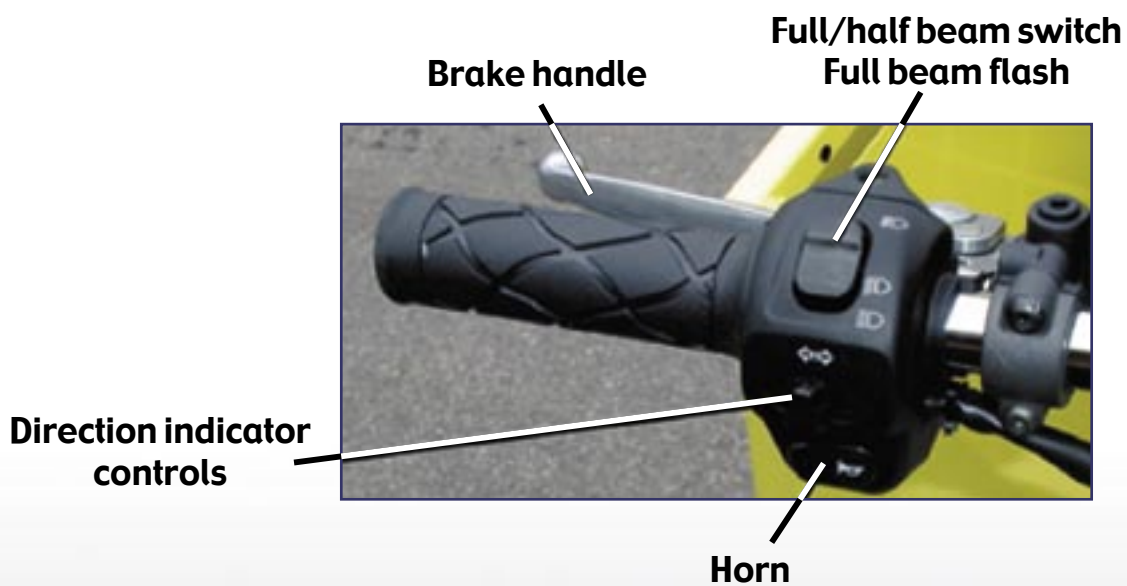
When the spring-cushioned switch is pressed in, the moped's horn sounds.
How much is left in the battery is indicated by the light diodes.

Direction indicator controls

If the direction indicator control is pushed to the left, the left indicator light starts to blink. If the direction indicator control is pushed to the right, the right indicator light starts to blink. To reset the direction indicator control to its neutral position, press it in.

Brake handle

The control for the rear wheel brake is on the left-hand side of the handlebar.



Handlebar controls – right-hand side

Gear knob for forward and reverse

The gear knob has three positions:

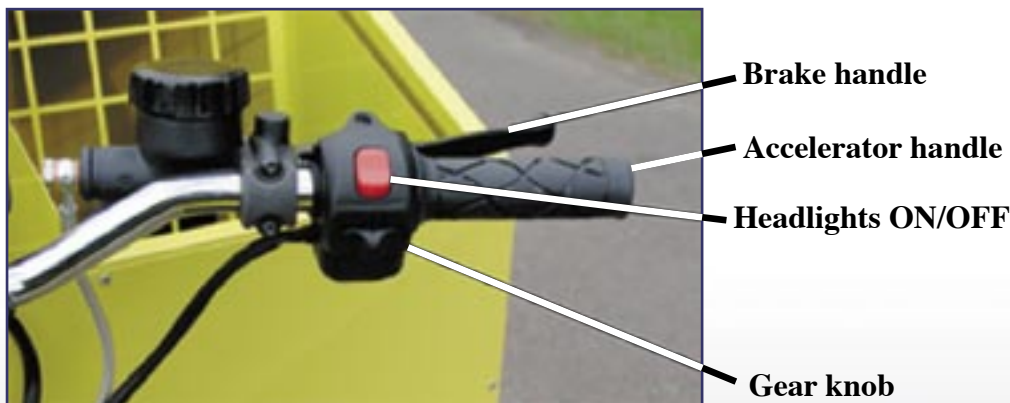
- Forward - the switch is pushed to the left
- Neutral
- Reverse - the switch is pushed to the right

Brake handle

The control for the front wheel brakes is on the right-hand side of the handlebar.

Headlights

The toggle switch has two positions - ON and OFF



Accelerator control – right-hand side

Accelerator pedal (model Post)

The accelerator pedal which regulates the speed is controlled by the right foot and is on the right-hand side.

Accelerator handle (model Civil)

The accelerator pedal which regulates the speed is controlled by the right foot and is on the right-hand side.



Parking brake

The moped is fitted with a mechanically manoeuvred parking brake which operates on the rear wheel. It is operated with a lever placed on the frame tube underneath the saddle.

The handbrake comes on when the lever is pulled upwards. If the lever is pressed downwards, the handbrake is switched off/remains in the off position.



Parking brake

DRIVING POSITION



Positioning the saddle

Height of saddle

Position required height of saddle by loosening both of the saddle seat screws. Ensure that both of the saddle seat screws are tightly secured on the saddle post's flat surface.

Saddle tilt

To change the saddle tilt, loosen the saddle bolt. Adjust the saddle to the required tilt and tighten the saddle bolt so that the saddle sits securely in position.

Height adjustment of saddle

Loosen the saddle bolt and move the saddle backwards or forwards. After adjustment, tighten the saddle bolt so that the saddle sits securely in position.

Adjustment of rear shock absorbers (hardness)

Use universal pliers on the shock absorbers' adjustment tube to adjust the rear shock absorbers' hardness. Turn in the required direction to adjust the suspension, harder or softer.

When adjusting the shock absorbers, it is extremely important that both shock absorbers have the same adjustment (hardness/softness) on both sides.



PRIOR TO START, DAILY CHECKS

Make it a habit to check the moped every day. Faults that are discovered and rectified early, keep maintenance costs at a low level.

During the daily inspection, the following should be checked:

- that the lighting, indicators, brake lights and horn function as intended.
- that all of the moped's brakes function as intended.
- that the brake fluid level is sufficient in both containers.
- that the driving chain is correctly tightened and oiled.
- that the accelerator pedal moves easily and springs back to its original position.
- that the tyres are not damaged and that the air pressure is correctly adjusted.

DRIVING INSTRUCTIONS

Turned the master switch $\frac{1}{4}$ turn counter clockwise.

Do not touch the accelerator pedal when you are turning the motor on at the master switch. If this happens, an error message from the motor controller will indicate a faulty start.

Turned the ignition switch key 1 set clockwise to drive position (position 2).

Driving forwards

Push the power switch to the left.

Adjust your speed with the accelerator pedal.

Avoid heavy acceleration as this affects the moped's range negatively.

Safety function

If you press down on the accelerator pedal too quickly, the motor controller may interpret this as an error and the moped will not move forward. If this happens, release the accelerator pedal completely and try again, this time don't press the accelerator pedal down so quickly and the moped will work normally again.

Driving backwards

Push the power switch to the right.

When reversing, speed is reduced to 50% for safety reasons. Always be extra careful when reversing because the moped may tip over if you have to turn abruptly.

The moped must be completely at a stop before there is any change in the driving direction.

Driving downhill

When driving downhill at a constant speed, the motor will start to regenerate. This means that the motor will be temporarily reconnected so that it functions as a generator, i.e. it will start to charge the moped's battery.

When regeneration starts, the accelerator pedal may be kept at the same position and the motor controller will ensure that the vehicle maintains within its permissible speed by connecting and disconnecting regeneration.

When regeneration starts, it will feel as though the moped is braking, which is completely normal.

BRAKES

The moped is equipped with:

- a hydraulic brake which operates on both of the front wheels
- a hydraulic brake which operates on the rear wheel.
- a mechanically operated parking brake.

Use both the front brake and the rear brake at the same time to ensure safe and efficient braking. Get to know how the brakes work by "test driving" in a secluded area away from normal traffic.

Use of the hydraulic brakes should produce an "immediate" effect. If the brake handle however feels as though there is too much or too little play, the brakes must be inspected immediately by a specialist.



Please note!

**It is extremely important that the brakes work properly and efficiently.
In order to ensure that they work properly,
all service and repairs must be carried out by an expert.**

Checking the brake fluid

If the brake fluid level is too low, air can enter the system which will either reduce the brakes' efficiency or cause them to stop functioning. Before you drive, always check the brake fluid level on both hand-operated brakes.



Important:

- There must be no impurities in the brake fluid. Before you fill up with brake fluid you must always ensure that the area around the filling cap is clean. Filling up with brake fluid must also take place in an area where the air is free from circulating pollutants.
- Used only recommended brake fluid. Incorrect brake fluid can damage rubber seals and hoses which will cause leakages and inefficient braking.
- Ensure that no water is mixed in with the brake fluid, as this will lower its boiling point. Vaporisation which occurs when brake fluid boils leads to inefficient braking or no braking effect at all.
- Brake fluid is highly corrosive on paint and plastic and spilled brake fluid must therefore be wiped away immediately.

Changing the brake fluid

Brake fluid is a hygroscopic fluid which means that it absorbs water from the ambient air. As already mentioned, this will cause a reduction in the boiling point for the brake fluid.

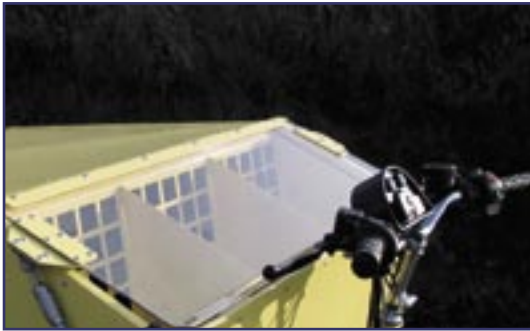
Water mixed in with the brake fluid will also result in corrosion in the braking system's various parts. For these reasons, brake fluid must be changed every two years. This should be carried out by an expert.

PLATFORM LOADS

Load

Ensure that the load is as evenly distributed over the loading area as possible. Also ensure that the centre of gravity is low by placing heavy objects as low-down as possible. If possible, position the load so that it cannot move when you are driving.

Always adjust your speed based on the load you are carrying, this is of particular importance when you're driving round curves and on uneven ground.



Weather protection in down position.



The weather protection in the up position functions as a windbreak for the driver.

**Lockable box
for helmet**



The lockable hatch door is kept in the open position by two gas springs.

Placing of the Lock



Platform lock



With the platform in the up position, the battery, head-lamp and electric box can be accessed for service.

SERVICE AND MAINTENANCE

Service in connection with run-in period

The following should be carried out when the moped has been driven 200 – 500 kms.

- Clean, lubricate and check the tension in the chain.
- Lubricate the wires for the motor brake and parking brake.
- Check the brake fluid level.
- Tighten screws, nipples, bolts etc.

Maintenance schedule

Action	Every week	Every fortnight	Every quarter	Annually
Check the fluid level in the battery				
Clean, lubricate and check the tension in the chain				
Check the brake fluid level.				
Lubricate the wires for the motor brake and parking brake				
Checked the charger's input socket				
Check and adjust the stem				
Check and adjust the stub axle bearings				
Tighten screws, nipples, bolts etc.				
Clean motor - brushes				
Change brake fluid	To be changed every two years irrespective of driving distance!			

Lubrication of wires

The wires to the accelerator pedal and parking brake must be lubricated a few times every year. It is very important that the wires are lubricated during the winter period and in particular if the moped is used in the wet.

Check that the wires' casings are in good order. Damaged casings allow dirt and water to enter the wire and impede its movement. A damaged wire casing means that the whole wire has to be changed.

Tyres

Conduct regular checks of the tyre pressures and adjust if necessary. The moped is fitted with valves just like those on a car. Filling up with air and adjusting the air pressure may therefore be carried out at a normal petrol station.

Make it a habit to clean the area around the valve before the valve cap is removed so that dirt does not enter the valve.

Incorrect air pressure results in excessive wear on the tire and also affects drivability negatively.

If the air pressure is too low, roll friction increases which leads to impaired performance and a decrease in the range between battery charges.

Please observe that the values in the table below apply to cold tyres equivalent to the outside ambient temperature.

After a few kilometres of driving, the tyres become warm and the air pressure increases somewhat, which is completely normal.

Tyres	Air pressure, cold
Front	400 kPa (4 bar)
Rear	400 kPa (4 bar)

It is dangerous to drive with worn tyres as this affects the , brakes and pulling capacity as well as the moped's road holding in a negative way.

The driving chain

The driving chain consists of several moving parts and it therefore requires regular cleaning, lubrication and adjustment in order for it to work as intended. When driving in the wet, on dusty roads or in other demanding environments, tighter service intervals than those indicated in the maintenance schedule are required.

Lubricating the driving chain

First of all wipe clean the chain with a soft cloth. If the chain is extremely dirty, it can be cleaned in diesel or with any other similar solvent. Thereafter, lubricate the chain with a good quality chain spray.

Adjusting the chain

It is very important that the chain tension is correctly adjusted. If the chain is too taut, it may cause damage to the bearings in the motor and the rear wheel. Furthermore, if the chain is too taut, it will work inefficiently which means that motor power is to some extent reduced. If the chain is too loose, it can hop off. A damaged chain can also cause damage to the motor and the chain sprocket.

If the chain is correctly adjusted, the play in the middle of the chain should be between 10 and 15 cm. To adjust the chain tension, first loosen the ring nuts. The rear wheel should then be moved forwards or backwards by loosening or tightening the chain tightener's ring nuts until the correct chain tension is obtained. Tighten both of the nuts with the same amount of tension.

Ensure that both chain wheels are in line with each other, indicated by scales on both sides. The arrows should mark the same spot on both scales, see picture below. Adjust if necessary and check once again that the chain tension is correct.



Check that the chain tension is correct by first pressing the chain downwards...

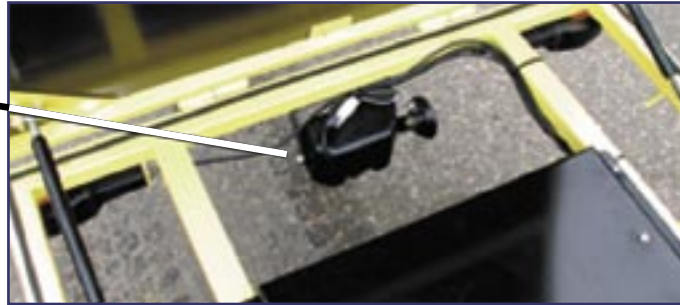
and then lifting it up. If correctly adjusted, the play should be 10 - 15 millimetres.



Adjusting the headlamp

Adjustment of the headlamp is important so that it does not dazzle oncoming traffic. Adjustment can be made by loosening the screws which hold the headlamp in place.

**Loosen the screws
on both sides.**



Changing a bulb

When changing a bulb in the headlamp it is important not to touch the bulb with your fingers. If any fat from your fingers adheres to the bulb, it will evaporate because of the heat and will be deposited on the reflector which will eventually become dull. Do not touch the reflector's surface as it will become soiled and will therefore affect the luminous efficiency.

Cleaning and rust protection

Keep your moped clean by washing it regularly with water and car shampoo. As an alternative to car shampoo, 5 - 10 cl of liquid detergent to 10 L of water may also be used. Rinse the whole moped down with lukewarm water until the dirt has softened. Wash the moped with a sponge and then rinse off to remove the dirt.

A degreasing agent may be used for extremely dirty surfaces.

Regular use of car wax will protect the moped's paintwork against oxidation, dirt and discolouration at the same time as a waxed surface is easier to keep clean.

All types of surfaces can be protected by waxing. As well as the painted surfaces, aluminium, chrome and zinc surfaces can also be protected. It is a particular benefit to wax just before the winter period starts. Use the same type of wax intended for use on cars. In particular, it is recommended that a modern polymer wax is used which is easy to apply at the same time as it provides a very hard, shiny and durable surface.

High-pressure jet cleaning must not be used as its powerful spray can cause damage by entering the motor, electrical equipment, wheel hub and other parts which are sensitive to water.

Bird droppings contain chemicals which affect and discolour the paint very quickly. Remove bird droppings immediately.

FUSES

To protect the moped's electrical system, it is equipped with several different types of fuses.

All the fuses are in the moped's electric box.

Main fuse

The master fuse, 160 A protects in the event of a motor fault occurring or if there is a short-circuiting of the cables to the motor. When changing a faulty fuse, the reason why it became faulty must be determined. Only an expert should be allowed to change the master fuse.

Fuses for the battery charger

The battery is equipped with two fuses:

Fuse 30 A

The battery charger's master fuse.

Tube fuse 5 A

This fuse is intended for the red control lamp on the instrument panel.

Flat pin fuses

The moped is equipped with four flat pin fuses placed in the fuse box, position F1-F4.

F1 = Motor control 5 A

F2 = Battery indicator 5 A

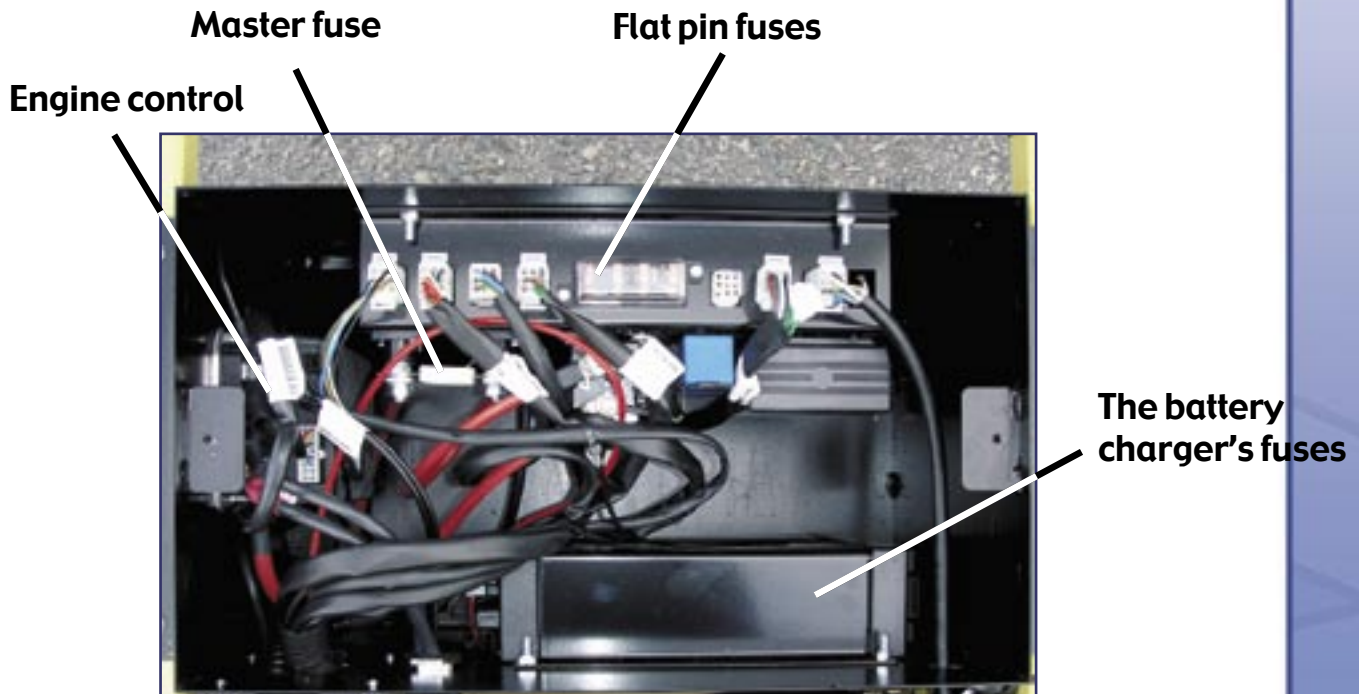
F3 = Voltage converter 5 A

F4 = Lights, indicators, brake lights 10 A

If any of the moped's electrical components do not work, this may be due to a burnt-out fuse as a result of a temporary overload. To check and inspect a fuse, they must be removed. Pull the fuse upwards and check the wire.

Replace the faulty fuse with any one which has the same colour and ampere rating.

If several fuses in the same area have burned out, there is something wrong with the electrical system and the fault must be rectified by an expert.



DRIVING DURING THE WINTER

Battery care, wintertime

The battery's capacity and the moped's range reduces when the temperature drops. During the winter, it is therefore of particular importance to ensure that the batteries are fully charged.

Over-discharged batteries are easily damaged because of the cold if the temperature drops below -12°C . Never leave the moped with discharged batteries if there is a risk of freezing.

Check wires and the chain more often when it is cold

Both the wires and the chain need extra attention during the winter period. This is particularly important when driving through areas where road salt has been used. You should therefore make it a habit to clean the chain and lubricate both the chain and wires more and at more regular intervals during the winter.

THE BATTERY

The moped is equipped with special batteries intended to be used in electrical vehicles. With the right care, the batteries will function for many years. Contact Norsjö Mekaniska AB when the batteries need to be replaced.

Running the batteries in

New batteries require 10 -15 charges and discharges before full capacity is obtained.

Charge the batteries after every working day

The batteries will become damaged if they are left standing in a discharged condition. The materials in the battery change so that it makes it more difficult to charge the batteries to full capacity. You should therefore never leave your moped with a discharged battery at the end of a working day. Charge the batteries immediately.

Avoid over-discharging

Repeated over-discharging reduces the life expectancy of the battery considerably and it can also make it more difficult to fully charge the battery. Respect the battery re-charge signal which tells you when it is time to charge.

Risk for frost damages

Over-charged batteries may be damaged if the temperature drops below -12°C Fully charged batteries can tolerate temperatures down to -50°C before they become frost damaged.

Check the battery acid level

Check the battery acid level in all cells at least once a week. This check should be made when the battery has just been charged. The level of the electrolyte must be between the bottom of the cell cap's perforated basket and the max. level marking at the bottom of the top edge of the basket.

Add water when the battery has just been charged. Only use distilled or de-ionised water. Fill up to the maximum level so as to safely avoid an overflow the next time the battery is charged.

Distilled or de-ionised water must be kept in a well-sealed plastic container.

Only use distilled or de-ionised water when topping up your batteries.

Water from the tap will damage the battery.

Cleaning the batteries

To remove oxidation or spilled battery acid use a slightly damp cloth. To stop continued oxidation on the battery's terminals, it is suitable to lubricate the terminals with terminal grease.

Return of worn-out batteries

For environmental reasons, discarded batteries should be taken care of in a proper manner. This can be arranged via the retailer or by depositing the battery with your local municipal waste station.

THE BATTERY CHARGER



Safety

Read carefully through the safety instructions on page 3 before the battery is charged.

General

The moped is equipped with an efficient and maintenance-free battery charger. The battery charger is equipped with voltage-controlled trickle charging which means that the charger goes automatically over to trickle charge. The charger should therefore be connected at all times when the moped is not being used. The battery charger is equipped with a thermal relay. Charging can therefore be terminated in the middle of a charge if the temperature in the charger gets too high. When it has cooled down, charging will restart automatically.

Mains voltage

On delivery, the charger is preset to 230 V. The battery charger can be set to the following voltages 220 V, 230 V and 240 V. The switch is placed inside the housing and may only be changed by authorised personnel when the charger is dead (i.e. not connected).

Connection

Connect the charge-cable to the socket. Connecting to the mains should be done with the accompanying charge cable. The battery charger may only be connected to a protective earthed socket. Before connection, check that the cable is not damaged.

Normal charge time

Normal charge time is 8 - 13 hours.



Attachment plug

FAULT FINDING BATTERY CHARGING

The battery charger is not working as intended

Mains connection

Check that the charger is directly connected to the mains socket and that the power is switched on.

The charger's fuse is defective

Break the battery charger's mains connection and change the fuse.

The voltage is too low

To protect the battery it will not start to charge if the battery's starting voltage is less than 20.4 V.

Contact service personnel or Norsjö Mekaniska AB if the battery's starting voltage is less than 20.4 V.

Temporary overheating

The battery charger's thermal relay is activated when the charge temperature gets too hot. When it has cooled down, charging will restart automatically.

Faulty control lamp or tube fuse

If the battery charger is working even if the control arm is not lit, the fault is most probably due to a faulty bulb or tube fuse.

Charging process

The charger is equipped with 4 light diodes which indicate:

Yellow light diode

Main charge in progress.

Yellow light diode

Additional charge and cell equalisation is taking place. The charge will continue until the battery has reached its maximum capacity.

Green light diode

The battery is fully charged and voltage-controlled trickle charging is in operation.

Red light diode

Indicates that a fault has arisen. The battery is not charged. The main charge period of 10 hours or the total charge period of 16 hours may have expired. Consult an expert for fault finding and rectification.

FAULT FINDING, MOTOR CONTROLLER

The motor controller is equipped with a light diode which continuously blinks a code.

Normal function

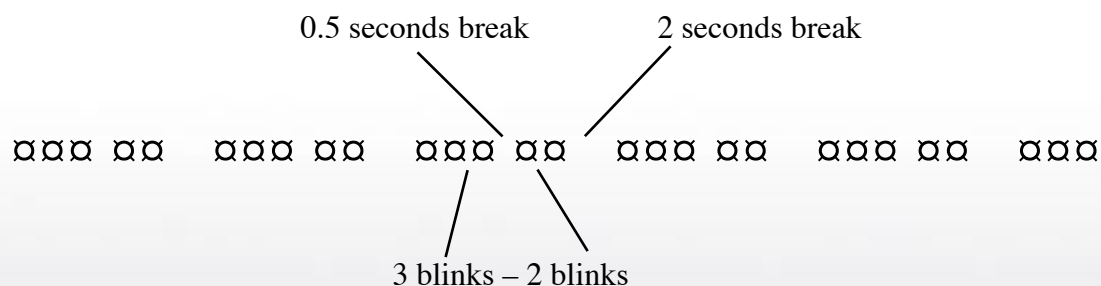
During normal functioning, the light diode will blink once every three seconds approximately.

Error messages

If there is a fault on the motor controller, motor, contacts, battery, potentiometer or any of the cables, the light diode will blink 1 - 4 times followed by a pause of 0.5 seconds with a further 1 - 4 blinks. Thereafter, the error message will repeat itself after a two second break.

Example of error message

The moped does not work and after conducting a check on the motor controller light diode, it produces a blink sequence of 3 - 2. The table below describes this blink sequence fault as: "sheet metal shield is stuck".



Fault finding

Simpler fault finding

Certain types of faults may be identified and rectified by using the Swedish explanation in the table.

Fault finding with the programming unit

If a programming unit is connected to the motor controller, more detailed error messages will be obtained. These can be found under the heading: "Programmer LCD Display".

Complete manual

For advanced fault finding, a complete manual for the motor controller can be downloaded from www.curtisinst.com.

Fault finding		
Fault code Blink- sequence	Explanation	Programmer LCD Display
1 - 1	Motor controller defect	CURRENT SHUNT FAULT
1 - 2	Motor controller defect	HW FAILSAFE
1 - 3	Motor controller defect	M-SHORTED
1 - 4		SRO
2 - 1	1) Stoppage or short-circuited potentiometer 2) Defective potentiometer	THROTTLE WIPER HI
2 - 2		EMR REV WIRING
2 - 3	1) Faulty start 2) Potentiometer wheel is slipping on the axle 3) Defective potentiometer	HPD
2 - 4		THROTTLE WIPER LO
3 - 1	1) The contactor coil is short-circuited 2) The shunt field is short-circuited	FIELD SHORT
3 - 2	Sheet metal shield is stuck	MAIN CONT WELDED
3 - 3	1) Field wire open 2) Shunt field open	FIELD OPEN
3 - 4	Bad contact with contactor	MISSING CONTACTOR
4 - 1	1) Battery voltage too low 2) Oxidation on battery terminals 3) Loose cable connections	LOW BATTERY VOLTAGE
4 - 2	Battery charger is connected	OVERVOLTAGE
4 - 3	PMC temperature is below -25°C	THERMAL CUTBACK
4 - 4		ANTI - TIEDOWN

LONG-TERM STORAGE OF MOPED

General

If the moped is not going to be used for a longer period, there is a risk that corrosion damage will arise.

Wash the moped thoroughly and lubricate the moped's moving parts. Carry out any repairs before storage.

If the long-term storage is to take place in a damp environment or in a salty area, painted metal surfaces should be covered with a thin film of motor oil. Ensure that the oil does not come into contact with plastic or rubber parts.

Battery

Before the moped is stored, the batteries must be cleaned and wiped down with a damp cloth.

Do not use a high-pressure jet cleaner as this can lead to water getting into the battery. Use battery grease on the batteries' connections.

The batteries should be stored at a temperature greater than 0°C but no greater than 30°C. The batteries should be fully charged when the moped is stored. Charge the batteries once a month.

TOWING THE MOPED

If necessary, the moped may be towed short stretches. The tow rope should be attached to the moped's front axle.

The moped's main switch must be switched OFF during towing.

The moped's brakes must work if the moped is to be towed. If the brakes are defective, the moped must be transported on a trailer or lorry.

**Tow speed must not be greater than 15 km/h.
Ensure that towing is carried out calmly and safely and be
aware that the braking distance is greater when towing.**

TECHNICAL DATA

Motor

Manufacture:	Advanced D.C. Inc
Motor type:	Sepex 24 V
Power:	Max 3 kW

Motor controller

Manufacture:	Curtis 1243-43XX PMC
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Main fuse

Type:	160 A
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Flat pin fuses

F1:	5 A (Motor controller)
F2:	5 A (Battery indicator)
F3:	5 A (Voltage converter)
F4:	10 A (Lights, indicators, brake light)

Battery indicator

Manufacture:	Curtis 840
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Battery charger

Manufacture:	Curtis 1620FS
Car fuse:	30 A (charging)
Tube fuse:	5 A (control lamp)
Mains connection	
Voltage:	On delivery 230 V. Adjustable from 220V to 230V or 240V.
Max. current:	3.8 A

Charging

Charge time:	8 - 13 hours dependent on rate of discharge
Maximum power consumption/charge:	6.6 kWh

Batteries

Voltage:	24 V
Manufacture:	Hawker
Working principle:	Freely ventilated lead-acid
Type:	Tubular plate
Number of batteries:	12
Capacity:	175 Ah

Electrical system – moped's communication

Voltage:	12 V, negative earth
Headlamp:	1 x12 V 35/35 W
Parking lights:	12 V 5 W
Rear light:	1 x12 V 4 W BA9s
Brake light:	1 x 12 V 10 W BA15s
Indicators:	4 x12 V 10 W BA15s
Blue control lamp - Full beam:	1 x 12 V 1.2 W
Green control lamp - Indicators:	1 x 12 V 1.2 W
Red control lamp - Charge:	1 x 24 V 1.2 W

Voltage converter 24V to 12V

Type:	PPV 6S DCDC
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Chain transmission motor - rear wheel

Chain:	114 links
Chain wheel - front:	10 teeth
Chain wheel – rear:	85 teeth

Brakes

Front:	Hydraulically manoeuvred drum brakes
Rear:	Hydraulically manoeuvred drum brake
Parking brake:	Mechanically manoeuvred drum brake operating on rear wheel
Brake fluid:	DOT 4

Tyres

Tyre size - front:	4.00 - 8 55 M
Tyre air pressure - front:	400 kPa (4 bar)
Tyre size - rear:	4.00 - 12 67 J, or 110/100 - 12 67 J
Tyre air pressure - rear:	400 kPa (4 bar)

Dimensions and weights - model Short

Total width:	997 mm
Total length:	2357 mm
Curb weight:	328 kg
Maximum load:	177 kg

Dimensions and weights - model Long

Total width:	997 mm
Total length:	2607 mm
Curb weight:	335 kg
Maximum load:	170 kg